Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of controlling optical signal during transmission between a first unit and a second unit, comprising the steps of:

transmitting a wave division multiplexed optical signal having a predetermined set of ranges of wavelengths from the first unit to the second unit;

amplifying the wave division multiplexed optical signal at the first unit to generate an amplified wave division multiplexed optical signal;

monitoring ~~an~~ a first average value of a total optical strength level of at least one of the ranges of the amplified wave division multiplexed optical signal at the first unit;

monitoring a first probe optical strength level of at least one of the wavelengths of the amplified wave division multiplexed optical signal at the first unit; ~~and~~

monitoring at a second unit a second average value of a total optical strength level of the at least one of the ranges of a received wave division multiplexed optical signal from the first unit;

monitoring at the second unit a second probe optical strength level of the at least one of the wavelengths of the received wave division multiplexed optical signal from the first unit;

transmitting the second average value of a total optical strength level and the second probe optical strength level from the second unit to the first unit; and

adjusting said amplification at the first unit so that a sum of the first average value and the second average value of the total optical strength level ~~and the probe optical strength level~~ is ~~are~~ substantially matched with a sum of the first probe optical strength level and the second probe optical strength level in order to substantially reduce a gain tilt and an optical signal-to-noise ratio in the amplified wave division multiplexed optical signal.

2. (original) The method of controlling optical signal during transmission according to claim 1 wherein said adjusting further comprising the steps of:

comparing the probe optical strength level to a predetermined gain tilt value to generate a first comparison result; and

controlling said amplifying step based upon the first comparison result.

3. (original) The method of controlling optical signal during transmission according to claim 1 wherein the predetermined gain tilt value is retrieved from a storage table.

4. (original) The method of controlling optical signal during transmission according to claim 1 wherein said adjusting further comprising the steps of:

comparing the total optical strength level to a predetermined output level value to generate a second comparison result; and

controlling said amplifying step based upon the second comparison result.

5. (original) The method of controlling optical signal during transmission according to claim 1 wherein the predetermined output level value is retrieved from a storage table.

6. (cancel)

7. (original) The method of controlling optical signal during transmission according to claim ~~6~~ 1 further comprising additional steps of:

transmitting the amplified wave division multiplexed optical signal to a receiving unit via an optical fiber of a predetermined length;

monitoring a transmitted total optical strength level of at least one of the ranges of the amplified wave division multiplexed optical signal at the receiving unit after said transmitting step; and

monitoring a transmitted probe optical strength level of at least one of the wavelengths of the amplified wave division multiplexed optical signal at the receiving unit after transmitting step.

8. (currently amended) The method of controlling optical signal during transmission according to claim 7 wherein a sum of the input total optical strength level at a transmission unit before transmission and the transmitted pro~~v~~be optical strength level at ~~a~~ the receiving unit after the transmission substantially is identical.

9. (currently amended) The method of controlling optical signal during transmission according to claim 7 wherein a sum of the input probe optical strength level at a transmission unit before transmission and the transmitted probe optical strength level at ~~a~~ the receiving unit after the transmission is substantially identical.

10. (original) The method of controlling optical signal during transmission according to claim 1 further comprising additional steps of:

transmitting the amplified wave division multiplexed optical signal to a receiving unit via an optical fiber of a predetermined length;

monitoring a transmitted total optical strength level of at least one of the ranges of the amplified wave division multiplexed optical signal at the receiving unit after said transmitting step; and

monitoring a transmitted probe optical strength level of at least one of the wavelengths of the amplified wave division multiplexed optical signal at the receiving unit after transmitting step.

11. (original) The method of controlling optical signal during transmission according to claim 10 wherein said amplifying step is adjusted based upon the total optical strength level, the probe optical strength level, the transmitted total optical strength level and the transmitted probe optical strength level.

12. (original) The method of controlling optical signal during transmission according to claim 1 wherein said amplifying step is adjusted with respect to an output level of the amplified wave division multiplexed optical signal.

13. (original) The method of controlling optical signal during transmission according to claim 1 wherein said amplifying step is adjusted with respect to a gain tilt of the amplified wave division multiplexed optical signal.

14. (currently amended) A system for controlling optical signal during transmission between a first unit and a second unit via optical fiber, comprising:

said first unit further comprising:~~a first and second optical fibers for transmitting a wave division multiplexed optical signal having a predetermined set of ranges of wavelengths~~;

an amplifier connected to said first optical fiber for amplifying ~~the~~ a wave division multiplexed optical signal having a predetermined set of ranges of wavelengths according to a predetermined amplification characteristic to generate an amplified wave division multiplexed optical signal, said amplifier outputting the amplified wave division multiplexed optical signal to said second ~~optical fiber~~ unit;

a first monitor ~~connected to said second optical fiber~~ for monitoring ~~an~~ a first average value of a total optical strength level of at least one of the ranges of the amplified wave division multiplexed optical signal;

a second monitor ~~connected to said second optical fiber~~ for monitoring a first probe optical strength level of at least one of the wavelengths of the amplified wave division multiplexed optical signal; and

an adjustment unit connected to said amplifier~~, said first monitor and said second monitor~~ for adjusting the amplification characteristic of said amplifier~~: so that the average value of the total optical strength level and the probe optical strength level are substantially matched in order to substantially reduce a gain tilt and an optical signal-to-noise ratio in the amplified wave division multiplexed optical signal.~~

siad second unit further comprising:

a third monitor for monitoring a second average value of the total optical strength level of at least one of the ranges of the received wave division multiplexed optical signal from the first unit; and

a fourth monitor for monitoring a second probe optical strength level of at least one of the wavelengths of the received wave division multiplexed optical signal from the first unit;

wherein said second unit sends the second average value of the total optical strength level and the second probe optical strength level to said first unit, and said adjustment unit adjusts the amplification characteristic so that a sum of the first average value and the second average value of the total optical strength level substantially matches a sum of the first probe optical strength level and the second probe optical strength level in order to substantially reduce a gain tilt and an optical signal to noise ration in the amplified wave division multiplexed optical signal.

15. (original) The system for controlling optical signal during transmission according to claim 14 wherein said adjusting unit further comprising:

a first comparator for comparing the probe optical strength level to a predetermined gain tilt value to generate a first comparison result; and

a first controlling unit connected to said amplifier and said first comparator for controlling the amplification characteristic based upon the first comparison result.

16. (original) The system for controlling optical signal during transmission according to claim 15 further comprising a first storage unit connected to said first comparator for storing the predetermined gain tilt value.

17. (original) The system for controlling optical signal during transmission according to claim 14 wherein said adjusting unit further comprising:

a second comparator for comparing the total optical strength level to a predetermined output level value to generate a second comparison result; and

a second controlling unit connected to said amplifier and said second comparator for controlling said amplification characteristic based upon the second comparison result.

18. (original) The system for controlling optical signal during transmission according to claim 17 further comprising a second storage unit connected to said second comparator for storing the predetermined output level value.

19.(cancel)

20. (currently amended) The system for controlling optical signal during transmission according to claim 14 further comprising:

a receiving unit connected to ~~said second optical fiber at a predetermined distance from~~ said amplifier for receiving the amplified wave division multiplexed optical signal as a transmitted wave division multiplexed optical signal;

a fifth monitor connected to said receiving unit for monitoring a transmitted total optical strength level of one of the ranges of the transmitted wave division multiplexed optical signal at the receiving unit; and

a sixth monitor connected to said receiving unit for monitoring a transmitted probe optical strength level of one of the wavelengths of the transmitted wave division multiplexed optical signal.

21. (original) The system for controlling optical signal during transmission according to claim 20 wherein said adjustment unit adjusts said amplifier based upon a combination of the total optical strength level, the probe optical strength level, the transmitted total optical strength level and the transmitted probe optical strength level.

22. (original) The system for controlling optical signal during transmission according to claim 21 wherein said adjustment unit adjusts based upon a sum of the total optical strength level of the amplified wave division multiplexed optical signal at said amplifier before transmission and the transmitted total optical strength level at said receiving unit after the transmission.

23. (original) The system for controlling optical signal during transmission according to claim 21 wherein said adjustment unit adjusts based upon a sum of the probe optical strength level of the amplified wave division multiplexed optical signal at said amplifier before transmission and transmitted probe optical strength level at said receiving unit after the transmission.

24. (original) The system for controlling optical signal during transmission according to claim 14 wherein said adjustment unit adjusts said amplifier with respect to an output level of the amplified wave division multiplexed optical signal.

25. (original) The system for controlling optical signal during transmission according to claim 14 wherein said adjustment unit adjusts said amplifier with respect to a gain tilt of the amplified wave division multiplexed optical signal.

26. (previously presented) The method of controlling optical signal during transmission according to claim 1 wherein a number of wavelengths is counted.

27. (previously presented) The method of controlling optical signal during transmission according to claim 1 wherein a selected one of the wavelengths in monitoring the probe optical strength level is the shortest one of the wavelengths.

28. (previously presented) The method of controlling optical signal during transmission according to claim 1 wherein a selected one of the wavelengths in monitoring the probe optical strength level is the longest one of the wavelengths.

29. (previously presented) The method of controlling optical signal during transmission according to claim 1 wherein a narrow band optical filter is used for a selected one of the wavelengths in monitoring the probe optical strength level.

30. (previously presented) The method of controlling optical signal during transmission according to claim 1 wherein a pair of photodiodes and a narrow band optical filter are used for implementing the reduction of the gain tilt.

31. (cancel)

32. (previously presented) The system for controlling optical signal during transmission according to claim 14 wherein said first monitor has information on a number of wavelengths.

33. (previously presented) The system for controlling optical signal during transmission according to claim 14 wherein a selected one of the wavelengths in monitoring the probe optical strength level is the shortest one of the wavelengths.

34. (previously presented) The system for controlling optical signal during transmission according to claim 14 wherein a selected one of the wavelengths in monitoring the probe optical strength level is the longest one of the wavelengths.

35. (previously presented) The system for controlling optical signal during transmission according to claim 14 wherein a narrow band optical filter is used for a selected one of the wavelengths in monitoring the probe optical strength level.

36. (previously presented) The system for controlling optical signal during transmission according to claim 14 wherein said adjustment unit and said second monitor further includes a pair of photodiodes and a narrow band optical filter for substantially reducing the gain tilt.

37. (canceled)